What's Working:

Vegetation Establishment & Maintenance

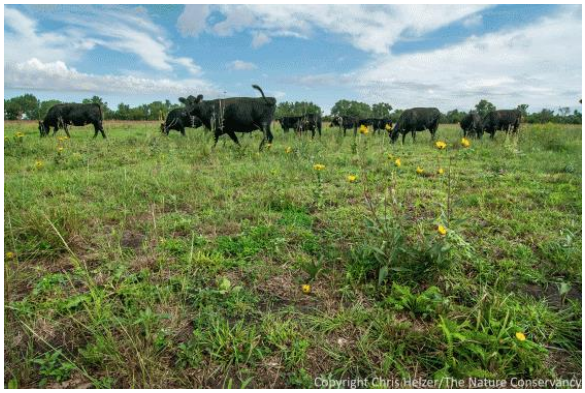
July 2016

Prairie Management

- Pheasants Forever has developed several informative "Habitat Tips" about prairie establishment. You can view videos on the foundation of habitat success, top 10 pollinator plants, the life history of monarch butterflies and more on their You Tube channel: https://www.youtube.com/channel/UCEwuixyOzH169u5cSYrDz5Q

- Creating a patchwork of habitats that are the same each year (Patch A is always burned, Patch B is never burned, Patch C is hayed every summer, etc.) can provide important heterogeneity on the landscape but also comes with some big disadvantages. Repetitive management, in which one patch of prairie is hayed or burned every year at the same time, can favor some plant species over others. The losers in that system may eventually disappear from the site. Losing those species and reducing overall plant diversity can impact pollinators, food sources for insects and wildlife, and even increase vulnerability of the prairie to invasive plant species. Second, repetitive management of a habitat patch can allow a buildup of predators and pathogens (disease-causing organisms) which adapt to the constant supply of prey/hosts. An overpopulation of either can seriously disrupt populations of species that might otherwise benefit from the provided habitat. Farmers and gardeners have long recognized the value of rotating crops to avoid buildups of pests and diseases, and prairie managers should learn from their experience.

Ideally, a shifting mosaic of prairie habitats should incorporate the entire spectrum of vegetation structure types, including uniformly short/sparse and tall/dense habitats at the extremes, but also habitats of various heights, densities, and degrees of patchiness in between. Varying the timing of burning and mowing treatments from year to year and patch to patch increase that range of habitat diversity. Grazing can also be valuable, where logistically feasible, because of the selectivity of grazers. Cattle and bison prefer to eat some plants over others, and those preferences change by season. By altering the timing of grazing and the stocking rate of animals, managers can create a wide variety of habitat structure types and influence which plant species are grazed and which are not. Regardless of what management treatments are applied, the key is



Cattle grazing can create short vegetation structure, but because cattle are selective eaters, they don't eat everything (if they're not forced to). By altering stocking rate, timing, and intensity, prairie managers can influence how many and which plants are grazed and ungrazed - creating many kinds of habitat structure.

to have a variety of recently-treated, recovering, and recovered patches across a prairie.

Patch-burn grazing is a great example of how to create a shifting mosaic of habitats, and it is a concept we've found valuable at our Platte River Prairies and at the Niobrara Valley Preserve. However, there are many other ways to create similar shifting mosaics, including the approach I take at our family prairie. Small prairies (less than 30-50 acres?) come with many challenges, and implementing a shifting mosaic is just one of them. On most prairies, however, the shifting mosaic approach seems to be the most effective way to maintain habitat and species diversity, both of which are critical to the resilience and function of prairie communities. (Chris Helzer, The Prairie Ecologist, March 8th 2016)

- While some of grazing preferences are pretty standard among all cattle, they also have a lot of learned preferences. For example last year we had two separate herds grazing on different areas, the one herd loved grazing trees and leaves from boxelder, green ash, cottonwood and even some on fresh buckthorn sprouts. This herd started the spring grazing in an oak savanna restoration area, and learned the new spring leaves on the boxelder were sweet. On the other hand another herd that had not been grazed in the trees, was put in a native warm season pasture with boxelder tree seedlings invading the prairie. That herd would not eat the trees at all. This year we put both of those same herds together, and now all the animals in this new herd readily graze trees. And actually it's usually the first thing they go to in the pasture when we rotate them, even though there is lots of good grass. So my point is that even though cattle have some natural tendencies to graze certain species, they can learn to graze others. In this case it has come in handy, and we try to use them to control tree invasion into the prairie and clear out our oak savanna. (Ryan Heinen, Minnesota Board of Soil and Water Resources)

- In South Dakota with TNC, we grazed bison and cattle. Although we grazed the bison in large 1000 acre pastures, so they tended to behave and graze as bison are typically described(focusing more on grasses, spending less time in wetlands etc) I have talked with bison producers that find the more bison are managed and grazed like cattle, the more they behave like cattle. So I think management, rotation, and pasture size can influence very much how bison or cattle behave and graze. (Ryan Heinen)

- Cattle will graze reed canary best in the spring early or after a fire when the grass shoots are young. They will also graze it later in the year when it is more mature, usually they will graze other species first before the reed canary, such as grazing smooth brome and then going to the reed canary. I think it would be good to graze early and set it back, and then re-graze the site in the fall.

  We have a pasture with native sod for grazing, it has some native species, but is highly invaded with reed canary, even in the uplands. Last year we grazed it starting May 15, it was lush and the cattle readily selected it. This year we started grazing that site on June 15, the Reed canary grass with in flower, the cattle grazed it, but only after the brome and bluegrass. We grazed it hard both years and it has now re-grown but won't produce seed. If it was easier to get our cattle there now I would graze it again right now. I do think it's important to have enough animals on the site and keep moving them(we divide up pastures with polyline electric fence and step-in posts to rotate animals moving them every few days) to avoid them from getting too selective and avoid the reed canary grass, or any other species we want them to target.

Another thing we have tried to do with them is trample and break up the mat of dead vegetation that is common in reed canary patches. Again I think having enough animals and bunching them in order to open up the mat, maybe even when the site is very wet in order to disturb the soil and allow other species to germinate. (Ryan Heinen, Minnesota Board of Soil and Water Resources)

- Our cattle seem to graze sweet clover at different times. They prefer the yellow flowered ones when flowering over the white. When I left TNC I remember they were just starting a project with DNR to use cattle to control sweet clover. Believe this was on TNC's Chippewa Prairie and Lac qui Parle WMA. I have also found that bison will graze sweet clover, but only have noticed them grazing on the flowers, and tips of the plants. Our draft horses also like to graze sweet clover during most of its growth stages.

  I think a good strategy would be to graze cattle on first year sweet clover plants later in the summer or fall when its usually still green, but the grasses are mature and seeded out. Then graze again in the spring when these plant regrow(similar to a late spring fire to set them back). A fire combined with grazing would probably be the best strategy, using the fire to stimulate sweet clover germination and then grazing. (Ryan Heinen, Minnesota Board of Soil and Water Resources)

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- Regarding restoration and management of prairie remnants- On remnant prairies which are degraded by invasive brush or trees, we've seen really good results from what the MnDNR staff calls "feathering". Brush is cut along the edge of the clearing, but stop at the point where there is no groundcover. The slash of small stems can be left in place as mulch, but larger limbs should be removed. After a growing season or two to allow sunlight to stimulate the suppressed seed bank, a prescribed burn is run through this released area. This provides for soil stabilization on steeper slopes, minimizing erosion and the temporary threat to water quality in native buffer areas. Success depends on the quality of the seedbank, so it's not a good choice for previously cropped areas. We've also seen it effective where conservation trees were planted for erosion control 50 years ago. If the invading shrub is a non-native, we've added herbicide treatments for further control, but if it is an aggressive native, like plum or gray dogwood, we've relied on the cut and burn as suppression, not eradication (Jyneen Thatcher, Washington Conservation District).

- Renville SWCD is using Buffer Cost-share funds to manage remnant prairies in the county. We are having great success burning non-native dominated grass stands inter-mixed with native forbs as late into May as possible. This results in invigorating the native warm season grasses while promoting the establishment of the forb seed present on the site. We are also mechanically removing invasive trees then applying chemical for spot treating stumps. DNR and Renville SWCD will be testing applications of Fusillade and Select herbicide to suppress non-native grasses for a year in order to allow establishment of native grasses; along with using select herbicide to suppress grasses while inter-seeding forbs (Renville SWCD).

- Our main remnant prairie problems are road authorities mowing them in August, in spite of signs and repeated phone calls reminding them not to mow the native prairie every year. Other issues are broadcast spraying along railroads and/or drift from agricultural spraying. Invasive species are also an issue in some areas (DNR Roadsides for Wildlife Program).

- We found a significant loss of remnant prairies along railroads in southern Minnesota due to encroachment of smooth brome grass. Brome was overwhelming native plant communities in Mesic soils

where no maintenance (neither cutting or burning) has been performed for the past 10 years or more. This speaks to a need for long-term maintenance (Tony Randazzo, HDR).